Health Consultation

OLD LASALLE DUMP

LASALLE, LASALLE COUNTY, ILLINOIS

CERCLIS NO. ILD984774950

MARCH 26, 1998

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia

Health Consultation: A Note of Explanation

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In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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HEALTH CONSULTATION

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CERCLIS NO. ILD984774950

Prepared by:

Illinois Department of Public Health
Under Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

BACKGROUND

The U.S. Environmental Protection Agency (USEPA) requested that the Illinois Department of Public Health evaluate data for public health implications at the Old LaSalle Dump site. The Old LaSalle Dump is an inactive site in the annual flood plain of the Illinois River in LaSalle, Illinois. The site is approximately six acres in size and is bordered on the north, south, and west sides by Huse Lake, a backwater lake of the Illinois River (Attachment 1). U.S. Highway 351 and wetlands lie east of the site. To the north is the Illinois and Michigan Canal. The city of LaSalle is about 1,000 feet north of the site on the bluff of the Illinois River. Before the site was used as a dump, it was a wetland.

The city of LaSalle operated the site and used it as a general refuse disposal area for the city from the early 1930s to approximately 1966. While in operation, a variety of residential and industrial wastes were deposited at the site. LaSalle's Electrical Utility Company (EUC) reportedly disposed rejected capacitors containing polychlorinated biphenyl (PCB) oil, cleaning solvents, and contaminated barrels. EUC reportedly shipped one to two truck tandem loads (10 cubic yards per tandem) of waste to the site at least once per week in the early to mid-1960s. The city of LaSalle closed the dump in 1966 and then allowed people to dump clean fill, including bricks, concrete slabs, wood, and a variety of other construction-type wastes, at the site. The fill material formed a highly permeable cap over the dump. Since the time of closure, the site has become well vegetated with grasses and trees over most of the area of previous deposition.

In June 1989, the site was placed on the Comprehensive Environmental Response, Compensation and Liability Act Information System (CERCLIS) list because of a discovery action initiated by the Illinois Environmental Protection Agency (IEPA). IEPA was responding to complaints from the residents of LaSalle concerning previous waste disposal practices.

On April 8, 1992, IEPA conducted an initial CERCLA Screening Site Inspection (SSI). IEPA observed several corroded and broken capacitors at the surface and protruding from the soil at the northern end of the site. IEPA collected soil and sediment samples during the SSI on May 6, 1992.

Two investigations conducted under the direction of USEPA followed the SSI. On November 9, 1995, under the Superfund Accelerated Cleanup Model (SACM) program, samples of surface water, surface soil, and sediment were collected. Groundwater samples were not collected due to an equipment malfunction. One year later, on November 21, 1996, USEPA and Superfund Technical Assessment and Response Team (START) members conducted soil and groundwater sampling.

DISCUSSION

For the 1992 SSI, IEPA collected 4 off-site sediment samples (X102-105) from Huse Lake and 9 on-site soil samples (X106-114) (Attachment 2). One off-site soil sample (X101), which served as a background sample, was also collected from a nearby park (Attachment 3). The Illinois Department of Public Health (IDPH) was requested to interpret these results and comment on their potential health effects in April 1995.

IEPA conducted the November 1995 sampling to supplement the SSI data collected. Seventeen samples (S1-11, S13, S15-18) were collected that included: 2 surface water samples (S12, S14); 4 sediment samples (S11, S13, S15-16) (Attachment 4); 9 surface soil samples; and 2 surface soil/sediment samples. After reviewing the information reviewed, IDPH was unable to determine which 9 samples were surface soil and which 2 samples were surface soil/sediment. Surface water samples were only analyzed for pesticides and polychlorinated biphenyls (PCBs or Arochlors), and no contaminants were detected. Information was not available about the locations where soil samples were collected.

USEPA conducted a follow-up investigation in November 1996 to better characterize the area around a 1995 sample that contained 30,000 parts per million (ppm) Arochlor-1248. Six soil and 4 groundwater samples (S1-6 and GW1-4) were collected. Soil samples S1, S4, S5, and S6 were composites of 5 discrete samples (Attachment 5). All samples were collected from 2 to 4 inches below the surface, except sample S4, which was collected 5 to 12 inches below the ground surface. Soil samples were analyzed only for PCBs.

The concentration of each groundwater, soil, and sediment contaminant was compared with the appropriate comparison value used to select contaminants for further evaluation (Attachment 6). Soil and sediment samples were also compared with typical Illinois background inorganic soil constituents [8]. Contaminants that exceeded comparison values or for which no comparison value was available were selected for further evaluation.

Tables 1 and 2 list information for samples collected in 1992 and 1995. Although people trespassing on site could be exposed to contaminants in soil and sediment through incidental ingestion and inhalation of contaminated dusts or dermal contact, exposure would most likely be small since the site is vegetated. However, IDPH evaluated the health risk for possible exposures to site contaminants by assuming the site is not vegetated, which represents the worst case scenario. Populations likely to be exposed are trespassers that include people picnicking or fishing at the site (Table 4).

Polycyclic aromatic hydrocarbons (PAHs) were detected at elevated levels in one soil sample in 1992 and in several samples in 1995. PAHs are formed during the incomplete burning of coal, oil, gas, wood, garbage, or other organic substances like tobacco and charbroiled meat. PAHs are found virtually everywhere in soil. In general, environmental concentrations are ranked as follows: urban levels are greater than agricultural levels, and agricultural levels are greater than undeveloped rural levels. Some PAHs, such as benzo(a)pyrene (BaP), have been

classified as *probable* human carcinogens. Levels of PAHs were present above comparison values in only one sample collected in 1992. The PAHs found at that location may have been the result of wood burning or charcoal ash dumping. In 1995, PAHs were found in more samples, and levels were above background agricultural soil levels but were below background urban soil levels [5]. IDPH evaluated the highest concentration of BaP detected in 1995 and concluded that no apparent health hazard exists for adults or children if occasionally exposed to site related PAHs.

Arochlors were another group of contaminants detected on the site. Arochlors are commercial PCB mixtures produced in the United States before 1977 [6]. The toxicity of different Arochlors depends on the PCB congener present in the mixture. Congeners with a greater percentage of chlorine by weight are more toxic. Arochlor-1260 is 60% chlorine by weight and is considered the most toxic. Like some PAHs, Arochlors have also been classified as *probable* human carcinogens. They have been associated with skin, nose, and throat irritations in humans, and laboratory animals have displayed liver, stomach, thyroid gland injuries and decreased fertility in females. Some Arochlors detected on the site did not have a comparison value. The comparison value for PCBs is based on the toxicity of Arochlor-1260, which is used to evaluate relative toxicity of other Arochlors.

Arochlors were found during the SSI in several samples at the collected from the northern end of the site where several corroded and broken capacitors were either at the surface or protruding from the soil. The highest detected concentration of PCBs was 160 parts per million (ppm). Arochlors were found during the 1995 USEPA investigation in 10 samples at concentrations ranging from 12 to 41 ppm and in an eleventh sample (S6) at a concentration of 30,000 ppm (Arochlor-1248). In 1996, the area surrounding sample S6 was examined further. Two samples contained elevated concentrations of Arochlor, and levels were not higher than 35 ppm. Because further characterization did not confirm the presence of high levels of PCBs previously found in the area, IDPH evaluated possible site-related exposure to PCBs based on the highest concentration detected in 1996. No apparent cancer risk or risk of other adverse health effects exist as a result of exposure to soils at the site.

Exposure to PCBs could occur from the consumption of contaminated fish. PCBs tend to bind tightly to soil. Movement of PCBs from soil to water seems unlikely, but contaminated soil could wash into the water. Any PCBs in water would not stay in the water column long but would deposit in sediment. Fish that eat along the bottom of the lake would ingest any PCBs present in the sediment. PCBs biomagnify through the food chain. That means that fish that eat bottom feeding fish would then become contaminated with PCBs at a higher level than the fish it consumed.

PCBs were not detected in sediment samples collected during the SSI. The highest concentration detected in 1995 was 41 ppm (Arochlor-1248). Although PCBs can accumulate in sediments through natural deposition from the atmosphere, samples collected in waters receiving industrial effluents have shown higher levels [6]. Similarly, PCB concentrations in sediments closer to the site are expected to be higher than those further away from the site.

Because of the mobility of fish, all of the fish in Huse Lake have the potential to become contaminated if lake sediments become contaminated.

Soil analyses conducted in 1992 for pesticides found heptachlor epoxide in one sample and 4,4'-DDE in another. Both compounds exist in soil because of past use of pesticides for both agricultural and nonagricultural purposes. Those contaminants were not detected at levels above comparison values in the 1995 sampling. If someone were exposed to site contaminants at detected levels, no carcinogenic or non-carcinogenic health risks would be expected from ingestion and dermal exposure to 4,4'-DDE and heptachlor epoxide.

In 1995, delta-BHC, also a pesticide used on crops, was detected in one sample at a level of 0.85 ppm. No comparison value for delta-BHC is available, but the average concentration in surface soil in Illinois is 0.02 ppm [2]. Delta-BHC was not found in many samples (low detection frequency). If someone were exposed to the delta-BHC present on the site, no adverse health effects are expected as a result of occasional exposure.

Elevated levels of several metals, including calcium, cobalt, magnesium, chromium, copper, iron, and sodium have been consistently present at the site in soil and sediment; however, they were not found at levels that exceed comparison or background levels. Lead was detected (2,100 ppm) during the investigations at levels greater than the IDPH guideline for soils in samples (X106-107, S5-7, S11). Exposure to elevated levels of lead is of particular concern for children because it may lead to nervous system damage, such as decreased intelligent quotient (IQ) scores, decreased concentration, and reduced growth. In adults, exposure may cause decreased reaction time, memory loss, and anemia [4]. Kidney and brain damage is also possible in adults and children who receive high doses. Levels of lead on the site are unlikely to present a health hazard to children who only occasionally trespass and play in the area.

Groundwater samples were collected east of the site and are labeled GW1 through GW4 (Attachment 5). Laboratory analyses showed elevated amounts of lead and PCBs present in the samples. The results are shown in Table 3 .

Groundwater flows into Huse Lake and from there continues westward for a half mile to the Illinois River. The nearest groundwater well is about half a mile north of the site. IEPA records indicate that drinking water is probably not contaminated with site-related contaminants.

Groundwater samples were collected east of the site. Groundwater flows westward; therefore, the samples are not representative of possible groundwater constituents entering Huse Lake and the Illinois River. Concentrations of any possible contaminants are likely to be diluted upon entry into Huse Lake because of the large volume of water in the lake.

Lead was present in all groundwater samples, and the levels were above the USEPA action level. The action level for a contaminant is similar to the Maximum Contaminant Level (MCL), which has been established by USEPA for public water supplies and is deemed

protective of public health, considering the economic feasibility of water treatment technology. Because lead is diluted in the lake and people are not likely to drink large amounts of lake water, exposure to lead from Huse Lake is not expected to be a health concern.

Arochlors were elevated in two separate, on-site groundwater samples; however, because of the dilution effect, concentrations in Huse Lake are not expected to be elevated. Although surface water was not tested for PCBs in 1996, they were not detected in the two surface water samples collected from Huse Lake in 1995. PCBs may have migrated to the lake since then, but a significant amount of contamination is not expected because PCBs tend to adhere to soil.

CONCLUSION

IDPH concludes that no apparent public health hazard exists at this time at Old LaSalle Dump. No completed exposure pathways have been identified, and any exposure to site-related soil contaminants should not result in any apparent health hazard for adults or children. Sediment contamination also does not appear to be a health concern at this time; however, further runoff or leachate may result in an increase in sediment concentrations of PCBs. Groundwater samples collected to date are not representative of what may be entering the lake; however, surface water samples previously collected did not contain contamination. If lake sediments become contaminated, fish may become contaminated as they feed.

RECOMMENDATIONS

If fishing frequently occurs near the site, IDPH recommends the following actions:

1) Additional sediment and surface water sampling to monitor any increase in PCB contamination.

2) If PCB concentrations in sediments increase in the future, fish samples should be collected and analyzed before fishing is allowed near the site. If runoff becomes a problem for the lake, a clay cap may be warranted to prevent runoff of PCBs into Huse Lake. An additional benefit of a cap would be to eliminate potential exposures to possible surface soil contaminants.

PREPARERS OF REPORT

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REFERENCES

1. Agency for Toxic Substances and Disease Registry, ATSDR Public Health Assessment Guidance Manual, 1992.

2. Agency for Toxic Substances and Disease Registry, Toxicological Profile for Alpha-, Beta-, Gamma-, and Delta-hexachlorocyclohexane, May 1994.

3. Agency for Toxic Substances and Disease Registry, ATSDR Draft Toxicological Profile on Heptachlor/Heptachlor Epoxide, October 1991.

4. Agency for Toxic Substances and Disease Registry, ATSDR Update Toxicological Profile for Lead, April 1993.

5. Agency for Toxic Substances and Disease Registry, Toxicological Profile for Polycyclic Aromatic Hydrocarbons, August 1995.

6. Agency for Toxic Substances and Disease Registry, ATSDR Draft Toxicological Profile on Polychlorinated Biphenyls, August 1995.

7. Illinois Department of Public Health, IDPH Lead Poisoning Prevention Code, Part 845.

8. Illinois Environmental Protection Agency, A Summary of Selected Background Conditions for Inorganics in Soil, August 1994.

9. Illinois Environmental Protection Agency, CERCLA Screening Site Inspection Report, 1992.

10. United States Environmental Protection Agency, Site Assessment Report for Old LaSalle Dump Site, April 1997.

CERTIFICATION

This Old LaSalle Dump Site Health Consultation was prepared by the Illinois Department of Public Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was begun.

Gail D. Godfrey
Technical Project Officer
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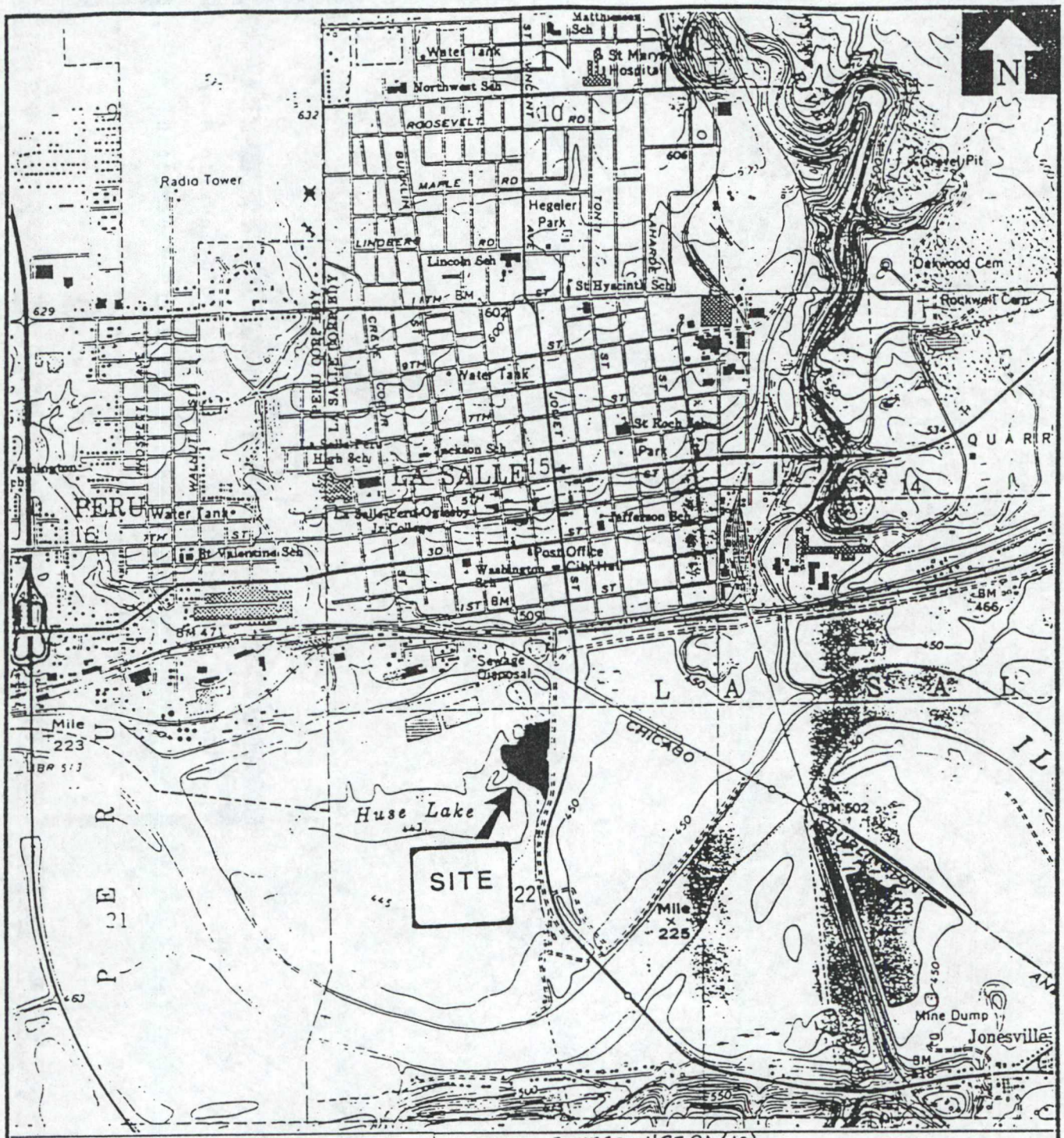
ATSDR

The Division of Health Assessment and Consultation, ATSDR, has reviewed this health consultation and concurs with its findings.

Richard E. Gillig
Chief, State Programs Section
Division of Health Assessment and Consultation
ATSDR

APPENDICES



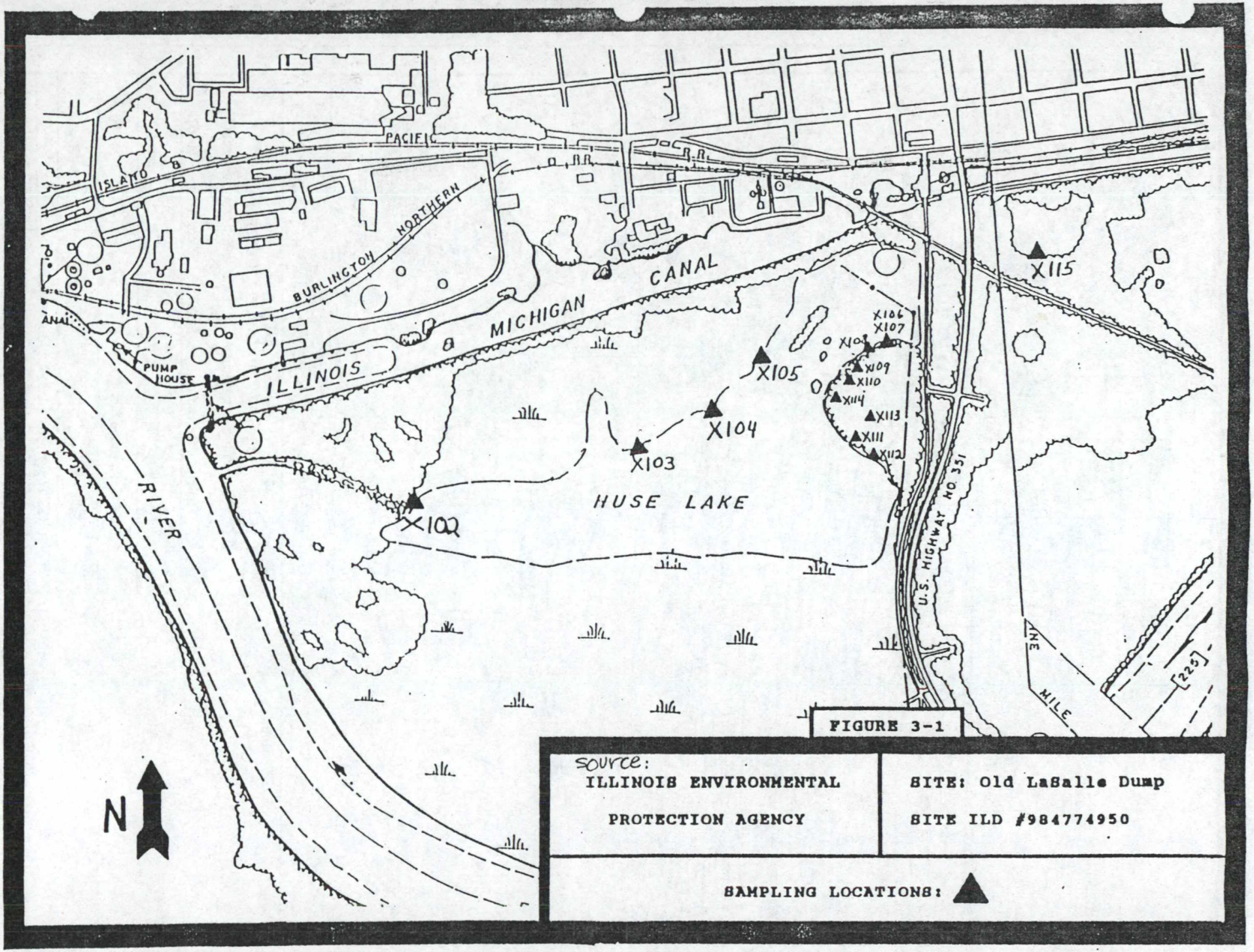
Site Location

Source: USEPA (10)

ecology and environment, inc.
Superfund Technical Assessment and Response Team
Region V
33 North Dearborn Street, Suite 900, Chicago, Illinois 60602

TITLE	Site Location Map		FIGURE # 2-1
SITE	Old LaSalle Dump Site		SCALE 1:24,000
COUNTY	LaSalle	STATE Illinois	TDD# S05-9604-002
SOURCE	USGS Topographic Map, 7.5 Minute Series - LaSalle, IL Quadrangle		DATE 1966 REVISED 1979

SAMPLE LOCATION MAP



SOURCE: Army Corps of Engineers; Stream Mile Map

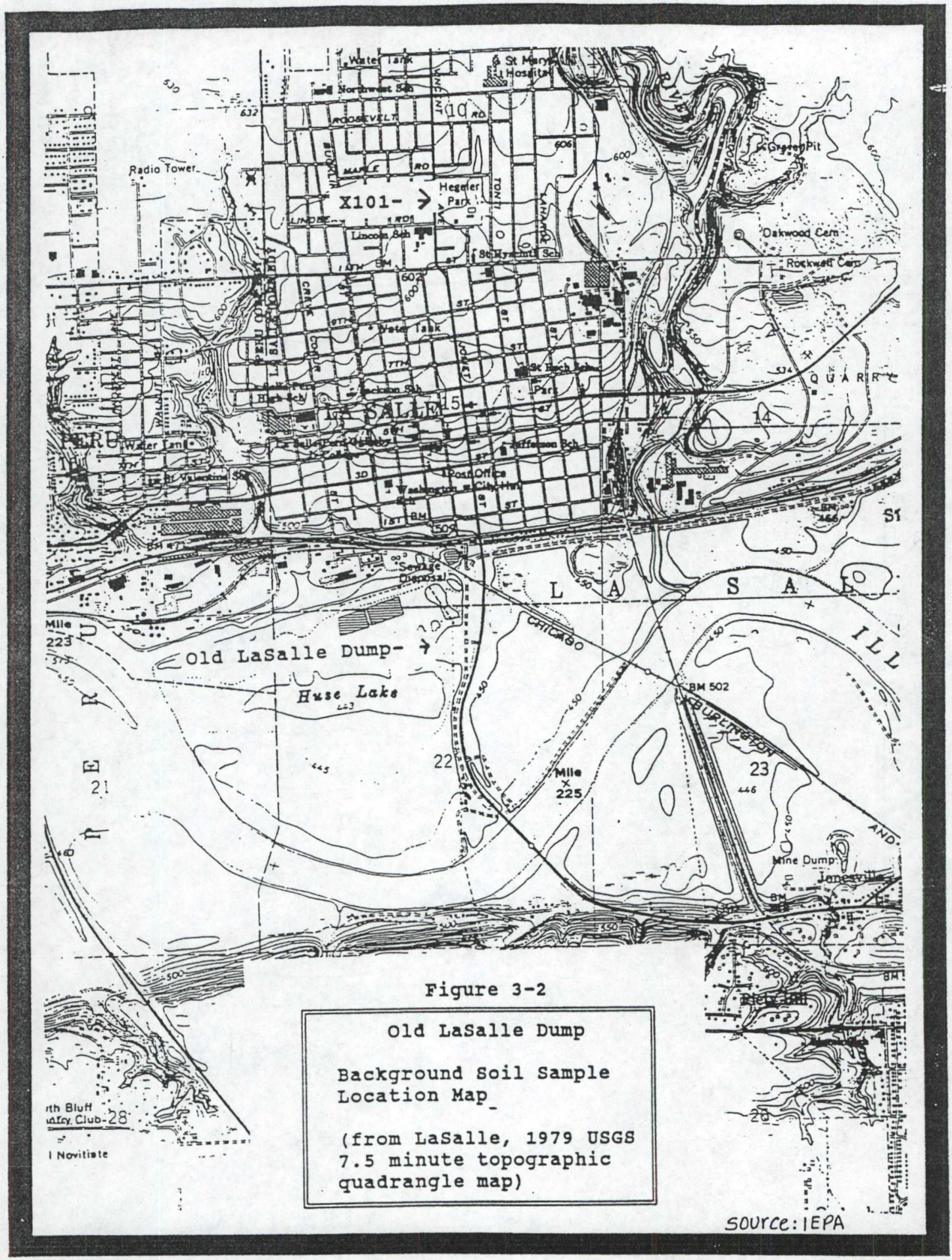


Figure 3-2

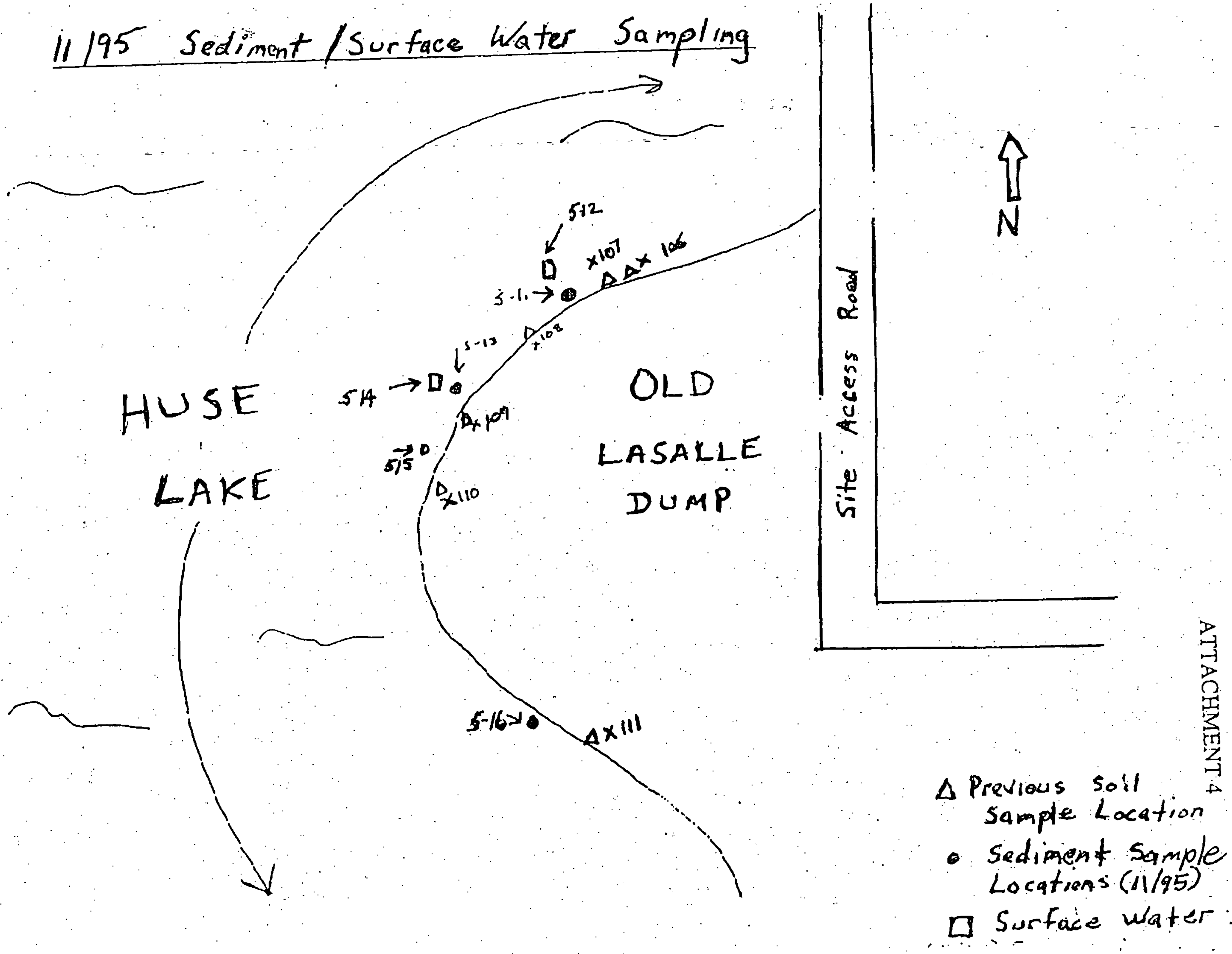
Old LaSalle Dump

Background Soil Sample Location Map

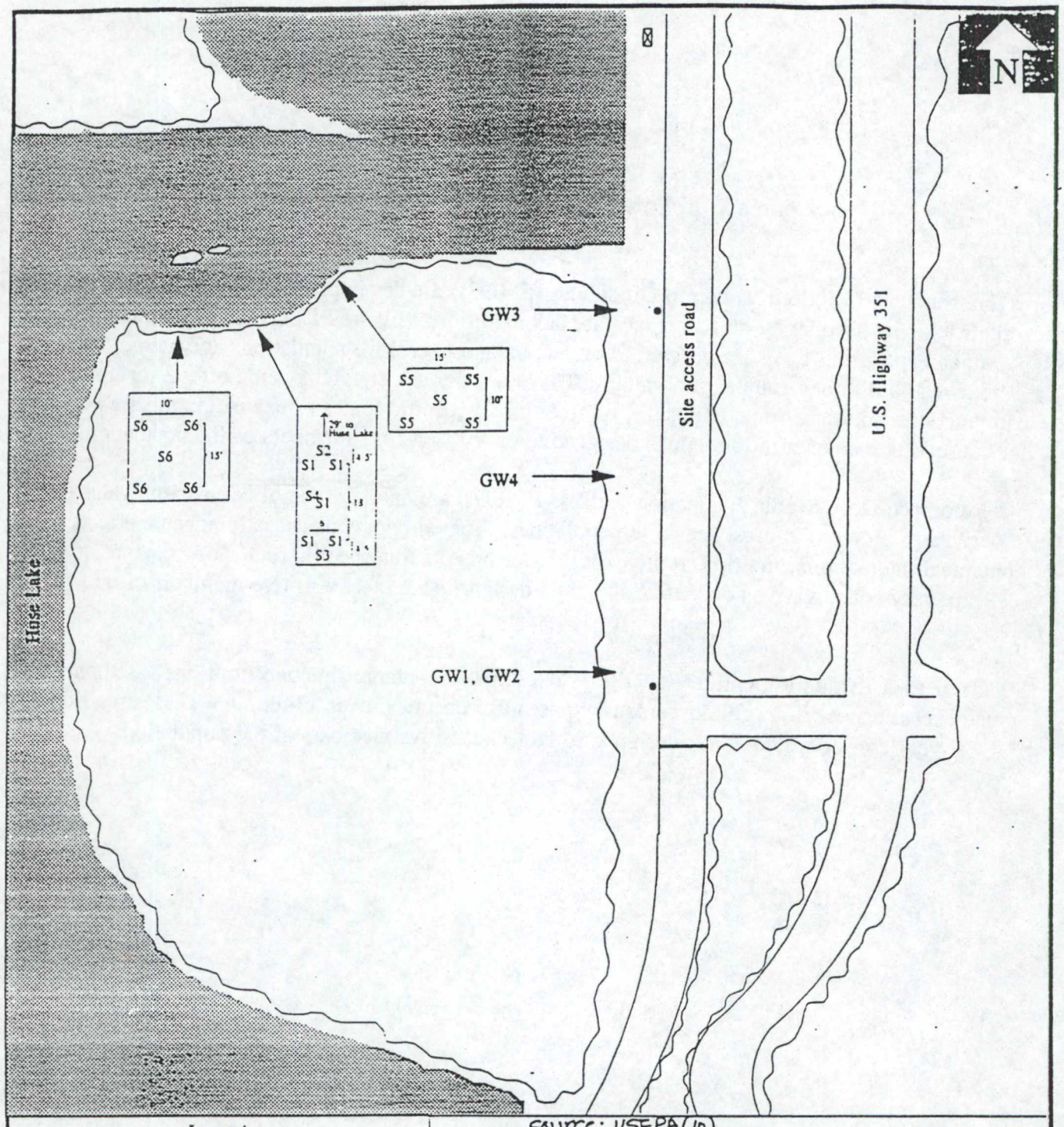
(from LaSalle, 1979 USGS 7.5 minute topographic quadrangle map)

ATTACHMENT 4

11/95 Sediment/Surface Water Sampling



Nov, 1996



Legend

GWx	Groundwater sample locations
⊠	Large power or telephone line tower
——	Locked gate
Sx	Soil sample locations
•	Telephone pole
▒	Water
	Woods

SOURCE: USEPA (ID)

ecology and environment, inc.
Superfund Technical Assessment and Response Team
Region V
33 North Dearborn Street, Suite 900, Chicago, Illinois 60602

TITLE: Site Features/Sample Location Map		FIGURE #: 2-2
SITE: Old LaSalle Dump Site		SCALE: none
COUNTY: LaSalle	STATE: Illinois	TDD#: S05-9604-002
SOURCE: Ecology and Environment, Inc.		DATE: 2/24/97

ATTACHMENT 6

Comparison Values Used In Selecting Contaminants

Environmental Media Evaluation Guidelines (EMEGs) are developed for chemicals based on their toxicity, frequency of occurrence at National Priority List (NPL) sites, and potential for human exposure. They are derived to protect the most sensitive populations and are not cut-off levels, but rather comparison values. They do not consider carcinogenic effects, chemical interactions, multiple route exposure, or other media-specific routes of exposure, and are very conservative concentration values designed to protect sensitive members of the population.

Reference Dose Media Evaluation Guides (RMEGs) are another type of comparison value derived to protect the most sensitive populations. They do not consider carcinogenic effects, chemical interactions, multiple route exposure, or other media-specific routes of exposure, and are very conservative concentration values designed to protect sensitive members of the population.

Cancer Risk Evaluation Guides (CREGs) are estimated contaminant concentrations based on a one excess cancer in a million persons exposed to a chemical over a lifetime. These are also very conservative values designed to protect sensitive members of the population.

Table 1 — 1992 IEPA SSI Sampling/Old LaSalle Dump				
Chemical Name	**Samples of Detection**	**Maximum Detected Concentration**	**Comparison Value**	**Source of Comparison Value**
Benzo(b)fluoranthene	X110	2.5 ppm	n/a	n/a
Benzo(a)pyrene	X110	2.7 ppm	0.1 ppm	CREG
Indeno(1,2,3-cd)pyrene	X110	1.3 ppm	n/a	n/a
Heptachlor Epoxide	X107	15 ppm	9 ppm	RMEG
4,4'-DDE	X106	20 ppm	2 ppm	CREG
Arochlor-1221	X106-108	34 ppm	10 ppm	EMEG
Arochlor-1248	X109, X114	160 ppm	10 ppm	EMEG
Arochlor-1260	X106, X109	38 ppm	10 ppm	EMEG
Chromium	X114	417 ppm	300 ppm	RMEG
Copper	X106-108, X110, X114	2230 ppm	<2.93-156 ppm	IEPA
Iron	X106-108, X114	209,000 ppm	5000-8000 ppm	IEPA
Lead	X106-107	1042 ppm	1000 ppm	IDPH[7]
Thallium	X109	5560 ppm	.02-1.6 ppm	IEPA

ppm = parts per million

Table 2 — November 1995, Soil and Sediment Sampling/Old LaSalle Dump				
Chemical Name	**Samples of Detection**	**Maximum Detected Concentration**	**Comparison Value**	**Source of Comparison Value**
phenanthrene	S5,S7	1.1 ppm	n/a	n/a
benzo(a)anthracene	S5,S7	0.79 ppm	n/a	n/a
benzo(b)fluoranthene	S3,S5,S7	0.91 ppm	n/a	n/a
benzo(a)pyrene	S1,S3,S5,S7,S8	0.7 ppm	0.1 ppm	CREG
indeno(123-cd)pyrene	S3,S5,S7	0.58 ppm	n/a	n/a
dibenzo(a,h)anthracene	S5	0.17 ppm	n/a	n/a
cobalt	S5,S10	38.9 ppm	2.1-23 ppm	IEPA
copper	S5-S7,S10	2,090 ppm	<2.93-156 ppm	IEPA
iron	S5	94,800 ppm	5000-8000 ppm	IEPA
lead	S5-S7,S11	2,110 ppm	1000 ppm	IDPH [7]
delta-BHC	S3	0.85 ppm	n/a	n/a
Arochlor-1248	S1-S3,S5-S9, S11,S13,S15	30,000 ppm	10 ppm	EMEG

ppm = parts per million

Table 3 — November 21, 1996 Groundwater Sampling Results				
Chemical	**Samples of Detection**	**Maximum Detected Concentration**	**Comparison Value**	**Source of Comparison Value**
Lead	GW1-4	1,500 ppb	15 ppb	MCL (action level)
Arochlor-1016	GW4	7.4 ppb	2 ppb	RMEG
Arochlor-1248	GW3	1.7 ppb	0.7 ppb	EMEG

ppb = parts per billion

Table 4. Completed Exposure Pathways

Pathway Name:	Source	Medium	Exposure Point	Exposure Route	Receptor Population	Time of Exposure	Exposure Activities	Estimated Number Exposed	Chemicals (reference to table in document)
On-site soil	On-site soil	Soil	Contacting Surface Soil	Ingestion Inhalation Dermal	Trespassers Fishers	Past Present Future	Trespassing or recreating on the site	20	Tables 1 & 2